



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

AUG 11 1989

MEMORANDUM

EPA OFFICE
REGION VII

SUBJECT: Superior Solvents/Thompson Chemical Site
St. Louis, Missouri

FROM: Pauletta R. France-Isetts, P.E. *Pauletta*
REML/SPFD/WSTM

TO: Daniel J. Shiel
Assistant Regional Counsel

THRU: Ronald E. King, Chief *Del For, R.K.*
REML/SPFD/WSTM

Baerbel E. Schiller
Associate Regional Counsel

It will be necessary for administrative orders to be negotiated and issued to the potentially responsible parties at the above-referenced site, if progress is to be made at this site. Specifically, administrative orders are needed for the response action to be taken by Superior Solvents regarding the leak into the Mill Creek Sewer and an order is needed for the RI/FS that should be performed to characterize the site more fully. In an effort, to assist Regional Counsel, with the preparation of these documents, Superfund is supplying the following facts for the orders:

1. The Superior Solvents/Thompson Chemical facility (hereinafter the "Facility") occupies two city blocks, 857 North and South and a vacated street named Lasalle.

2. The facility is bordered by Chouteau Avenue to the north, Convent Street to the south, Sullivan Boulevard (Wharf Street) to the east and Main (First) Street to the west.

0728

40487938



Superfund

0000

4.2

3. The facility is located approximately one mile south of the Gateway Arch and is 300 to 800 feet west of the Mississippi River's west bank.

4. The Mill Creek Sewer flows west to east towards the Mississippi River and lies, in part, directly beneath the facility. The Mill Creek Sewer was constructed in the late 1800s using limestone blocks. The arched sewer is 16 feet in width and 20 feet in height.

5. The facility has been industrialized since before the turn of the century.

6. The facility was identified in a 1981 United States Government report listing hundreds of industrial sites in 33 states where dioxin might be found. This report identified these sites based on their history and included sites where agent orange was produced.

7. The City of St. Louis investigated the site during June 1983.

8. The Missouri Department of Natural Resources (hereinafter "MDNR") began an investigation of the facility during August 1983 when they became aware of the presence of a leaking buried tank onsite.

9. The United States Environmental Protection Agency (hereinafter "EPA") sampled the facility during June 1984.

Analytical data from the samples obtained during this sampling activity indicated the presence of 2,3, 7,8-tetrachlorodibenzo-p-dioxin (hereinafter "TCDD" or "dioxin") at concentrations as high as 160 parts per billion (hereinafter "ppb").

10. The EPA Field Investigation Team again sampled the facility during October 1984. During this investigation, samples were taken at depths of up to 5.5 feet. Dioxin was detected in ___ of the ___ samples obtained at concentrations up to 62 ppb. In addition, 23 semi-volatile organics, specifically polycyclic aromatic hydrocarbons (hereinafter "PAHs") were detected in the samples taken in the area of the buried tank. Pentachlorophenol (hereinafter "PCP") was detected at a concentration of 1,800 parts per million (hereinafter "ppm").

11. The Mill Creek Sewer was sampled by EPA contractors during March 1987 to investigate the possible presence of TCDD and PAHs in the sewer. The analytical results from this sampling event indicated the presence of TCDD at levels ranging from non-detectable (0.5 ppb) to 12.7 ppb in the sewer roof and wall sediments. This sampling event also documented the presence of PAHs in the sewer.

12. A second sampling of the Mill Creek Sewer was conducted by EPA during August 1987 to further document the extent of contamination. The results from this sampling event indicated that detectable levels of TCDD were present in the sewer roof and walls downstream of the facility. TCDD was not detected in the

sewer samples taken upstream of the buried tank.

13. During November 1988, a third sampling of the Mill Creek Sewer was performed. Samples were collected from an oily seep which was observed to be entering the sewer. The purpose of this sampling was to determine if the oily seep was solvent-type material which could be mobilizing dioxin downward from the site surface. Two samples were obtained from the seep area; the first was obtained from the northern sewer wall at a distance of 200-205 feet upstream of the sewer outfall. TCDD was detected at 27 ppb. Several volatile organic compounds (hereinafter "VOCs"), including 1,1,1-trichloroethane, trichloroethene, benzene, tetrachloroethene, toluene, and xylene were detected at concentrations ranging from 4 ppm (benzene) to 150 ppm (xylene). The second sample was obtained from the north sewer wall at a distance of 235-240 feet upstream of the sewer outfall. TCDD was detected at a concentration of 30 ppb. Several VOAs, including 1,1,1-trichloroethane, trichloroethene, toluene, ethyl benzene and xylene, were detected at concentrations ranging from 57 ppm (1,1,1-trichloroethane) to 16,000 ppm (xylene).

14. During December 1987, Superior Solvents and Chemicals, performed a removal action at the facility pursuant to the conditions of an Administrative Order on Consent. The response action consisted of removing the underground tank in compliance with the Tank Contents Removal Plan which was approved by EPA.

15. During the 1987 removal action, a buried, wooden conduit filled with a black, tarry-like substance was encountered in the south side of the excavation required to remove the tank. The location of and general direction of the conduit were identified and recorded prior to backfilling the excavation with clean soil.

16. The Barrett Manufacturing Company operated a coal tar processing facility at the site between 1900 and 1941. Barrett Manufacturing produced coal-tar chemicals, refined coal-tar, manufactured roofing and protective coatings and distributed coke-oven products and nitrogen materials.

17. Historians of the St. Louis area indicate that the wooden conduit encountered during the 1987 removal action is typical of transfer lines used along the Mississippi River during the 1900s. The materials in the wooden conduit and the historical time frame during which such conduits were used, would indicate that this transfer line was used by Barrett Manufacturing.

18. Allied Chemical and Dye Corporation obtained interest in Barrett Manufacturing in 1941. Allied Chemical and Dye Corporation operated the facility until 1947.

19. Allied-Signal is the successor corporation to Allied Chemical and Dye Corporation.

20. Thompson Chemical Company operated at the site from 1950 to about 1970. They used 2,4-D and 2,4,5-T to formulate herbicides during their tenure at the site.

21. Thompson Chemical Company had a contract with the Department of Defense to formulate the herbicide, Agent Orange,

between 1967 and 1969. Thompson Chemical Company produced 300,000 gallons of Agent Orange before the contract was canceled late in 1968.

22. Thompson Chemical Company employees admitted to dumping formulating waste materials down the storm sewer, which leads directly to the Mississippi River.

23. Testing conducted by Thompson Chemical indicated that the level of dioxin in the chemicals they produced was less than 100 ppb (0.10 ppm).

24. Wood Treating Chemicals, a wholly owned subsidiary of Monsanto Chemical Company, owned four (4) parcels of the facility between 1963 and 1974. They operated at the site as the exclusive sales agent for Monsanto pentachlorophenol during that time period.

25. Monsanto Chemical Company leased a portion of the facility from 1957 to 1963. Storage tanks containing various benzenes and naptha compounds were on the leased property.

26. A spill occurred while Monsanto was decommissioning the tanks in 196_.

27. Monsanto Chemical Company signed a lease for storage tanks, whose contents, were commonly used as carriers for pentachlorophenol in the wood treating process.

28. R. M. Morriss and his father operated as Associated Sales and Supply, which owned several parcels of the site during the 1950s. Associated Sales and Supply leased the property to

other entities, including Thompson Chemical Company and Monsanto Chemical Company, for industrial activities.

29. R. M. Morriss was active in the day to day business dealings of Wood Treating Chemicals as Vice-President and General Manager.

30. Union Pacific is the current owner of five (5) of the ten (10) parcels which comprise the facility. Union Pacific or its predecessor Missouri Pacific Railroad has owned these parcels since the early 1900s. Lessees of the property have included Thompson Chemical Company, Wood Treating Chemicals and Superior Oil.

31. Superior Oil Company and its parent company, Superior Solvents and Chemical Company, purchased four (4) of the ten (10) parcels which comprise the facility. They currently lease the remaining parcels of land.

32. Superior Oil Company is a bulk distributor of solvents. They maintain 21, 5,000 gallon above-ground storage tanks; 10, 10,000 gallon above-ground storage tanks; and 1, 15,000 gallon above-ground storage tanks for the storage and distribution of liquid solvent materials.

33. Tetrachlorodibenzo-p-dioxin is often found as a contaminant in chlorinated phenolic compounds. It persists in the natural environment and can be bioaccumulated. Exposure to TCDD has been associated with numerous adverse health effects, including cancer, genotoxicity, enzyme induction, chloracne,

teratogenicity, reproductive toxicity, immunotoxicity, porphyria cutanea tarda, and neurobehavioral changes.

34. Polycyclic aromatic hydrocarbons (PAHs) are rather persistent in the environment. Some PAHs are carcinogenic, causing tumors both at the site of application and systemically. The carcinogenic PAHs are generally active in mutagenic assays. They also cause skin disorders and immunosuppression. Adverse effects on the liver and kidney have been associated with exposure to PAHs in general. (A table indicating the carcinogenicity of PAHs is attached as Figure 1)

35. Benzene is an important industrial solvent and chemical intermediate. Benzene is a known human carcinogen, causing leukemia in exposed individuals. It also adversely affect the hematopoietic system. Benzene has been shown to be fetotoxic and cause embryoletality in experimental animals. Exposure to high concentrations of benzene in the air causes central nervous system depression and cardiovascular effects, and dermal exposure may cause dermatitis.

36. Pentachlorophenol is embryotoxic and fetotoxic. Chronic exposure has been shown to cause chloracne, headache, muscle weakness, weight loss, and liver and kidney damage. Technical grade pentachlorophenol is often contaminated polychlorinated dibenzo-p-dioxins, and these contaminants may be responsible for some of the toxic effects associated with exposure to pentachlorophenol. Pentachlorophenol is highly toxic to aquatic

organisms.

37. Preliminary results suggest that 1,1,1-Trichloroethane (hereinafter "1,1,1-TCA") induces liver tumors in female mice. It was shown to be mutagenic using the Ames assay. Inhalation exposure to high concentrations of 1,1,1-TCA depressed the central nervous system; affected cardiovascular function; and damaged the lungs, liver, and kidneys in animals and humans.

38. Exposure to high concentrations of xylene adversely affect the central nervous system and irritates the mucous membranes in humans. Xylene has been shown to be fetotoxic in rats and mice.